IN THE CLAIMS:

Please add new claims 28-41 and amend the claims as follows:

1.　(Original)　A method for predicting a plurality of surface multiples for a plurality of traces in a record of seismic data, comprising:

providing a plurality of target traces at a nominal offset and a nominal azimuth;

selecting a plurality of pairs of input traces, wherein the midpoints of the input traces in each pair are separated by half the nominal offset and the azimuth of a line connecting the midpoints of the input traces in each pair is equal to the nominal azimuth;

convolving the selected pairs of input traces to generate a plurality of convolutions; and

applying a three dimensional operator to the convolutions.

2.　(Original)　The method of claim 1, further comprising preconditioning the input traces to simulate zero offset traces.

3.　(Original)　The method of claim 1, further comprising preconditioning the input traces to simulate zero offset traces by a moveout correction.

4.　(Original)　The method of claim 1, wherein the target traces provide the locations at which the surface multiples are predicted.

5.　(Original)　The method of claim 1, wherein the nominal offset is a central offset value within a range of offsets.

6.　(Original)　The method of claim 1, wherein the nominal azimuth is a central azimuth value within a range of azimuths.

7.　(Original)　The method of claim 1, wherein selecting the pairs of input traces comprises selecting the input traces at half the nominal offset.

8.   (Original)   The method of claim 1, further comprising interpolating and regularizing the input traces.

9.   (Original)   The method of claim 1, further comprising locating each convolution at the midpoint of the line connecting the midpoints of the input traces in each pair.

10.   (Original)   The method of claim 1, wherein applying the three dimensional operator to the convolutions comprises locating the result of the three dimensional operator application at the midpoints of the target traces.

11.   (Original)   The method of claim 10, further comprising correcting the result to an actual offset and an actual azimuth.

12.   (Original)   The method of claim 1, wherein the three dimensional operator is a three dimensional demigration operator having an offset equal to half the nominal offset and a velocity equal to one of half the water velocity or half of a multiple velocity function.

13.   (Original)   A method for predicting a plurality of surface multiples for a plurality of traces in a record of seismic data, comprising:

dividing a plurality of target traces into one or more groups according to offsets;

dividing each group into one or more subgroups according to azimuths;

selecting a first subgroup having a first nominal offset and a first nominal azimuth;

selecting a plurality of pairs of input traces, wherein the midpoints of the input traces in each pair are separated by half the first nominal offset and the azimuth of a line connecting the midpoints of the input traces in each pair is equal to the first nominal azimuth;

convolving the selected pairs of input traces to generate a plurality of convolutions; and

applying a three dimensional operator to the convolutions.

14.   (Original)   The method of claim 13, wherein the target traces within each group are at a nominal offset.

15.   (Original)   The method of claim 14, wherein the nominal offset is a central offset value within a range of offsets.

16.   (Original)   The method of claim 13, wherein the target traces within each subgroup are at a nominal offset and a nominal azimuth.

17.   (Original)   The method of claim 15, wherein the nominal azimuth is a central azimuth value within a range of azimuths.

18.   (Original)   The method of claim 13, further comprising preconditioning the input traces to simulate zero offset traces.

19.   (Original)   The method of claim 13, further comprising locating each convolution at the midpoint of the line connecting the midpoints of the input traces in each pair.

20.   (Original)   The method of claim 13, wherein applying the three dimensional operator to the convolutions comprises locating the result of the three dimensional operator application at the midpoints of the target traces.

21.   (Original)   The method of claim 13, wherein the three dimensional operator is a three dimensional demigration operator having an offset equal to half the first nominal offset and a velocity equal to one of half the water velocity or half of a multiple velocity function.

22.   (Original)   A method for predicting a plurality of surface multiples for a plurality of traces in a record of seismic data, comprising:

providing a plurality of target traces at a nominal offset;

predicting a plurality of two dimensional surface multiples for a plurality of input subsurface lines; and

applying a two dimensional operator to the predicted two dimensional surface multiples.

23. (Original)   The method of claim 22, further comprising, prior to predicting the two dimensional surface multiples, preconditioning the input traces into the input subsurface lines.

24. (Original)   The method of claim 22, further comprising sorting the predicted two dimensional surface multiples into one or more planes according to offsets, wherein each plane has an associated nominal offset.

25. (Original)   The method of claim 24, further comprising selecting a plane of predicted two dimensional surface multiples having a first nominal offset.

26. (Original)   The method of claim 22, wherein applying the two dimensional operator comprises locating the result of the two dimensional operator application at the midpoints of the target traces.

27. (Original)   The method of claim 22, wherein the two dimensional operator is a two dimensional demigration operator with a velocity equal to one of half the water velocity or half of a multiple velocity function.

28. (New) A method for predicting a plurality of surface multiples for a plurality of traces in a record of seismic data, comprising:

predicting surface multiples for subsurface lines in the record using a two dimensional convolutional algorithm;

selecting a plurality of target traces; and

applying a velocity dependent operator to tailor and combine the predicted surface multiples for each target trace.

29.   (New) The method of claim 28, wherein applying the velocity dependent operator to tailor and combine the predicted surface multiples comprises locating the predicted surface multiples at the midpoints of the target traces.

30.   (New) The method of claim 28, wherein the predicted surface multiples subject to the velocity dependent operator are selected for each target trace based on the offset of the target trace.

31.   (New) The method of claim 28, wherein the predicted surface multiples subject to the velocity dependent operator are selected for each target trace based on the azimuth of the target trace.

32.   (New) The method of claim 28, wherein the velocity dependent operator is a two or higher dimensional operator.

33.   (New) The method of claim 28, wherein applying the velocity dependent operator comprises crossline stacking the predicted surface multiples.

34.   (New) The method of claim 28, wherein the velocity dependent operator comprises at least one of a dip moveout, an inverse dip moveout, a normal moveout, an inverse normal moveout, a migration and a demigration.

35.   (New) The method of claim 28, wherein the velocity dependent operator comprises an inverse normal moveout and stack.

36.   (New) The method of claim 28, wherein the subsurface lines are obtained by regularizing the recorded seismic traces.

37.   (New) The method of claim 28, wherein the target traces provide the locations at which the surface multiples are predicted.

38.   (New) The method of claim 28, wherein the velocity dependent operator employs a velocity equal to one of half the water velocity or half of a multiple velocity function.

39.   (New) The method of claim 28, further comprising:

sorting the predicted surface multiples into crossline order; and

interpolating the predicted surface multiples in the crossline direction prior to application of the velocity dependent operator.

40.   (New) The method of claim 28, further comprising dividing the target traces into nominal offset ranges prior to application of the velocity dependent operator.

41.   (New) The method of claim 28, further comprising dividing the target traces into nominal azimuth ranges prior to application of the velocity dependent operator.